DOCUMENT RESUME

ED 422 898 IR 019 096

TITLE	Computer/Technology Skills: Standard Course of Study and Grade Level Competencies, K-12. Revised.
INSTITUTION	North Carolina State Dept. of Public Instruction, Raleigh.
PUB DATE	1998-00-00
NOTE	68p.
PUB TYPE	Guides - Classroom - Teacher (052)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Academic Achievement; *Academic Standards; *Competency Based Education; *Computer Literacy; Curriculum Development; Educational Objectives; Educational Technology; *Elementary Secondary Education; Knowledge Level; Lifelong Learning; Public Schools; Skill Development; State Curriculum Guides; Student Needs
IDENTIFIERS	Computer Use; *North Carolina

ABSTRACT

North Carolina has maintained a "Standard Course of Study" since the 1890s; every five to seven years since that time, it has been revised to reflect the needs of North Carolina students. The Standard Course of Study includes curriculum that should be made available to every child in the state's public schools. The "K-12 Computer/Technology Skills Standard Course of Study" identifies the essential knowledge and skills that all students need to be active, lifelong learners in a technology intensive environment. The three competency goals defined include: (1) The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies; (2) The learner will demonstrate knowledge and skills in the use of computer and other technologies; and (3) The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information. Following an introduction and overview, activities and objectives are defined for these goals separately for grades K-8, and then collectively for grades 9-12 in different subject areas. Grade Level Strand Guides are provided individually for grades K-8 and collectively for grades 9-12. Contains a glossary of terms. (AEF)

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ED 422 898

COMPUTER/ TECHNOLOGY SKILLS

Standard Course of Study and Grade Level Competencies

K-12

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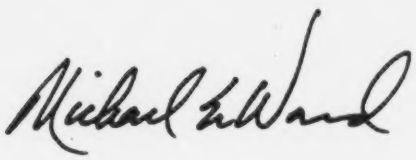
Public Schools of North Carolina
Department of Public Instruction

FOREWORD

North Carolina has had a ***Standard Course of Study*** since 1898. Since that time, the curriculum has been revised periodically to reflect the changing needs of students and society. The most recent total revision of the state curriculum occured in 1985. The 1985 ***Standard Course of Study*** reflected the knowledge, skills, and attitudes needed to function effectively in an industrial age. It also included efforts to develop mature thinkers and problem solvers.

In the years since 1985, we have witnessed a dramatic shift in the needs of business and industry, and society in general. These changes have been collectively heralded as the information age. The 21st century will bring new challenges in preparing students for the demands of an information age. While students must attain enabling skills such as reading, writing, and computing, they must also attain the new basics which include creative thinking and problem solving, interpersonal skills, negotiation and teamwork. Also since 1985, all the major content areas have developed National Standards which guide curriculum revisions. Major recent school reform efforts such as the ABC Plan with strong accountability components have necessitated an even more clearly defined state curriculum.

These changes, coupled with more in-depth learning at a much higher level, provide the foundation for current revisions to the ***Standard Course of Study***. The revisions are futuristic in outlook. They look at what students will need to know and be able to do to be successful in the 21st century.



Michael E. Ward
State Superintendent of Public Instruction

ACKNOWLEDGMENTS

The Department of Public Instruction gratefully acknowledges the cooperation and assistance received from individuals and groups throughout the State in this current revision process. Without such cooperation, the revisions and printing of the ***North Carolina Standard Course of Study*** would not have been possible.

We wish to express a special thanks to:

- the Office of Instructional Services for providing the leadership and vision that guided the development of these documents. The untiring efforts of this staff contributed greatly to the completion of this task,
- office support staff in instructional services who, in addition to their on-going responsibilities, word processed the revised documents,
- the many local educators, parents, and business people who participated in the current revision process by serving on curriculum committees and reacting to draft documents,
- faculty from the institutions of higher education who advised the staff and assisted in the revision of the curriculum,
- the Communications and Information Division for technical assistance in the publication of the documents,
- Association for Supervision and Curriculum Development (ASCD) for allowing its ***Dimensions of Thinking*** to serve as a framework for this revision process,

The curriculum will continue to be revised and improved to meet the needs of the children of North Carolina.

I. INTRODUCTION

I. INTRODUCTION

Background and Overview

North Carolina has maintained a Standard Course of Study since the 1890's. That document was a brief, simple guide which outlined the curriculum for the public schools. Every five to seven years since that time, the ***Standard Course of Study*** has been revised to reflect the needs of North Carolina students.

Following the passage of the Elementary and Secondary Reform Act in June of 1984, the area of Instructional Services within the North Carolina Department of Public Instruction began a revision of the ***Standard Course of Study.*** These efforts to define a basic education program for the State resulted in two publications:

- ***The Basic Education Program for North Carolina's Public Schools*** (Adopted by State Board of Education in response to a legislative mandate) - outlines the curriculum, programs not confined to subject areas, general standards, material support, and staffing which should be provided in all schools throughout the state.
- ***The North Carolina Standard Course of Study*** (Adopted as policy by the State Board of Education) - sets content standards and describes the curriculum which should be made available to every child in North Carolina's public schools. It includes the subject or skills areas of arts education, English language arts, guidance, healthful living, information/computer skills, mathematics, science, second language studies, social studies, and workforce development education. Also included are the philosophy and rationale underlying the curriculum frameworks and considerations for developing a thinking framework, aligning curriculum and assessment, and providing for the needs of exceptional children.

The revised ***Standard Course of Study*** has moved from a detailed, prescriptive curriculum guide to a more flexible guide to instruction, emphasizing what students should know and be able to do as they progress through various levels of proficiency and ultimately exit from high school. The revised curriculum focuses on themes and concepts rather than isolated facts. It emphasizes thinking skills and problem solving more than the memorization and recall of information.

The revised ***Standard Course of Study*** is based on recent research on how students learn. It is a curriculum that promotes integration through the identification of common skills and processes.

The ***Standard Course of Study*** includes the curriculum that should be made available to every child in North Carolina's public schools. Many public schools in the state presently offer an even more comprehensive curriculum. Required subjects and courses are outlined in the appendix of the ***Standard Course of Study.*** Finally, the ***Standard Course of Study*** is part of the Department of Public Education's continuous improvement efforts. The curriculum will be revised on a regular basis to remain consistent with the changing needs of our nation, state, and local communities.

Philosophy and Rationale

Education has long served as the key to equal opportunity for American citizens. We should be proud of our schools. Historically, American schools have prepared students to join an industrialized economy and become contributing citizens in their communities.

Today, however, the challenge of education is to prepare students for a rapidly changing world. Students in modern society must be prepared to compete in a global economy, to understand and operate complex communication and information systems, and to apply higher level thinking skills to make decisions and solve problems. American businesses seek students with the knowledge and skills to succeed in the international marketplace of today's information-based society. Whether at work or in post-secondary study, students must be able to apply what they've learned from their years of public schooling.

The purpose of the North Carolina ***Standard Course of Study*** is to guarantee that all students have access to equal education. If public education is an avenue to equal opportunity, high standards must be set for all students. ***The Standard Course of Study*** does not seek to prescribe how schools should organize themselves or how teachers should instruct. Rather, the curriculum sets standards against which schools and teachers may judge their success.

Curriculum Integration

The Department of Public Instruction views integration as a curriculum implementation strategy which links the content and skills from various disciplines. There are various models of integration which seek to achieve an acceptable degree of interdisciplinary learning. Generally, these models use the language and methodology from more than one discipline and focus on unifying themes, issues, problems, concepts, and experiences. These models help the learner make connections among the individual disciplines and are based upon the following beliefs.

Integration:

- Mirrors the real world in which we live
- Motivates students by making learning relevant to their personal lives.
- Adds coherence to vast amounts of information by making connections among disciplines.
- Addresses the overcrowded curriculum by viewing content as a "means" not an "end."
- Acknowledges reading, writing, speaking, listening, viewing, and the use of numbers as enabling skills within thinking processes.
- Fosters collaboration among students and teachers.

Although the North Carolina Department of Public Instruction strongly endorses the concept of integration among various disciplines, local school districts, schools, and classroom teachers are best able to develop curricular units which will be meaningful to the teachers and students at the classroom level. It is the responsibility of the State to set quality curriculum and performance standards and to develop models of integration which link curriculum, instruction, and assessment.

Thinking and Reasoning Skills

To become productive, responsible citizens and to achieve a sense of personal fulfillment, students must develop their ability to think and reason. It is no longer adequate for students to simply memorize information for recall. If graduates are to function effectively now and in the 21st century, they must be able to acquire and integrate new information, make judgements, apply information, and reflect on learning.

Research during the 1960's in cognitive psychology has led to the study of the processes that underlie learning. Although there are numerous models of intelligence and learning, the following guiding assumptions serve as the foundation for a thinking framework for North Carolina's public schools.

- All students can become better thinkers.
- Thinking is content dependent and influenced by the learner's prior knowledge of that content.
- The teaching of thinking should be deliberate and explicit with an emphasis on the transfer and application of thinking processes and skills.
- Thinking is improved when the learner takes control of his/her thinking processes and skills.
- Curriculum, instruction, and assessment should be aligned to enhance the teaching of thinking.
- Improving student thinking will require fundamental changes in the school culture, including lesson design, student assessment, classroom organization, and school governance.
- Over-emphasis on factual recall inhibits the development of thinking.
- Schools must model thoughtful behavior-decision making, problem solving and other thinking processes.
- Efforts to improve thinking within a school or school system should be guided by a conceptual framework and comprehensive plan.
- There is no single best program for the teaching of thinking.

The Department of Public Instruction has adopted ***Dimensions of Thinking**** (1988) as the framework for the revised curriculum. The more recent work, ***Dimensions of Learning*** (1994), builds on the theory and research from ***Dimensions of Thinking*** and provides direction from a practitioner's perspective.

Dimensions of Thinking

- Thinking Skills: These are specific cognitive operations-the building blocks of thinking. Examples are observing, recalling, comparing, and ordering.
- Thinking Processes: These are complex sequences of thinking skills. Different processes involve variable sequences of thinking skills. They occur over time.
- Creative Thinking: This is the ability to form new combinations of ideas to fulfill needs. It is generative in nature and is usually judged by outputs.
- Critical Thinking: This is reasonable, reflective thinking-deciding what to believe. It is evaluative in nature and helps one not to be blinded by his/her own point of view.
- Metacognition: This is the awareness of one's own self as a thinker.

* Marzano, R. J. et. al. (1988). ***Dimensions of Thinking,*** Alexandria, Va.: Association for Supervision and Curriculum.

Alignment of Curriculum and Assessment

The North Carolina ***Standard Course of Study*** sets content standards for what students should know and be able to do. The North Carolina ABC Accountability Plan establishes performance standards which specify the level of proficiency a student must reach in order to have met specific content standards. These performance standards are indicators of proficiency and include both the nature of evidence (essay, multiple choice response, open-ended, and performance) and the quality that is expected (acceptable to exemplary).

A balanced state assessment program serves dual purposes - informing about instruction and ensuring accountability. Accountability measures are the means of checking broadly to determine what has been learned within the school or Local Education Agency. These assessments allow for corrections in instructional focus and are useful in determining the degree to which the needs of all students are being met. These data also help teachers determine a student's progress from year to year. Accountability measures consider the timely and accurate reporting of information to parents and the public.

Assessments of individual student progress are multifaceted and document student progress over time. They are planned and administered by the classroom teacher and are focused on improving learning and promoting quality and depth in student work. These assessments make use of various resources such as instructional management systems (test item banks) and classroom-based assessments. They encourage the observation of process and the collection of student products. These assessments encourage student, teacher, and parent conferences where individual student progress is discussed and future instruction is planned.

The Department of Public Instruction has established procedures to evaluate both the state curriculum and assessment program. Decisions about instruction and assessment will be aligned to reflect the interrelated nature of the learning process. Future changes in the scope and form of assessments will reflect changes in the ***Standard Course of Study.***

Programs for Children With Special Needs

The Purpose of Programs for Exceptional Children

The main purpose of exceptional children programs is to ensure that students with disabilities develop mentally, physically and emotionally to the fullest extent possible through an appropriate, individualized education in the least restrictive environment.

Children with special needs are students who because of permanent or temporary mental, physical, or emotional disabilities need special education and are unable to have all their educational needs met in a regular class without special education or related services. Children with special needs include those who are autistic, hearing impaired (deaf and hard of hearing), mentally handicapped (educable, trainable, or severely/profoundly), multi-handicapped, orthopedically impaired, other health impaired, pregnant, behaviorally-emotionally handicapped, specific learning disabled, speech-language impaired, traumatic brain injured, and visually impaired (blind or partially sighted). See Section .1501 of Procedures Governing Programs and Services for Children with Special Needs for definitions of these classifications.

Programs and services for children with special needs may be classified as both instructional programs and instructional support services, depending on the educational need of an individual student.

Content Sequence and Learning Outcomes

Curricula for most children with special needs follow the curricula for students in general education. Emphasis must be given to instruction in English Language Arts, arts education, social studies, healthful living, mathematics, science, career and vocational education, depending on the needs of the individual student. Attention must focus upon cognitive, affective, motor and vocational development within the curricular areas. The Individualized Education Program for students with disabilities is based on a comprehensive assessment, and states in writing the special education offerings to be provided to each student with a disability.

Learning outcomes - knowledge, skills, concepts understandings, and attitudes - for students with disabilities will differ from student to student. For many exceptional students, the same learning outcomes developed for students in general education will be appropriate. Some exceptional students will meet the learning outcomes at a different time and in a different manner than students in general education. Some students with severely limiting disabilities might not meet these outcomes in general education and will need a totally different curriculum.

The purpose for adapting or changing curricula and teaching and learning strategies for students with disabilities is to help them achieve at their highest level, and to prepare them to function as independently as possible. Completion of school experience by students with disabilities is determined by meeting the requirements for graduation or by attaining the goals in the Individualized Education Program, or both. To graduate with a diploma, an exceptional student must earn the State mandated units of credit based on successful completion of course work, and acceptable scores on tests adopted by the State. Exceptional students who do not meet the State and local requirements for a diploma, but meet other requirements for graduation, will be eligible to participate in graduation exercises and receive a certificate of graduation.

Although course requirements are the same for exceptional students and non-exceptional students, the instruction must be tailored to meet each student's individual needs. Instruction is based on the curricula needs (academic, affective, motor, and vocational) of each student with a disability. Instruction varies from student to student so curricula may vary also. The key to all education for students with disabilities is the Individualized Education Plan.

Revised 3/13/97

State of North Carolina Graduation Requirements

4 units in English

3 units in mathematics, one of which must be Algebra I

3 units in social studies, one of which must be *Government & Economics, one in United States History and one in world studies

3 units in science, one of which must be biology and one a physical science

1 unit in health and physical education

6 units designated by the LEA, which may be undesignated electives or courses designated from the NC Standard Course of Study

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20 units

* As of March 13, 1997, the State Board of Education action requires students to take Economic, Legal and Political Systems (ELPS) in order to receive credit in government and economics. Exceptions are the following:

- Students who have already met the requirements of government and economics.
- Students registered for government and economics for either 1997 summer school or the 1997-1998 school year.
- Students who transfer from another state that have already met the requirement.

II. Course Of Study For Subject And Skills Areas

Computer/Technology Skills

K-12 Standard Course of Study

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ACKNOWLEDGMENTS

The Department of Public Instruction gratefully acknowledges the cooperation and assistance received from individuals and groups throughout the State in this current revision process. Without such cooperation, the revisions and printing of the ***K-12 Computer/Technology Skills Standard Course of Study*** would not have been possible.

We wish to express special thanks to:

The Computer Skills Curriculum Committee for providing the leadership and vision that guided the development of these documents. The untiring efforts of the members of this group contributed greatly to the completion of this task.

- Pam Jack, Elementary Technology Specialist, Union County Schools
- Betty Bean, Instructional Technology Specialist, Durham Public Schools
- Suzanne Griffin, Technology Director, Richmond County Schools
- Mary Lou Daily, Technology Specialist, Haywood County Schools
- Peggy Lafferty, Media and Technology Coordinator, Lincoln County Schools
- Sally Anderson, Technology Director, Watauga County Schools
- Martha Campbell, Information Skills and Computer Skills, NCDPI
- Mary Ellen Mills, Secondary Technology Specialist, Union County Schools
- Patsy Hester, Technology Coordinator, Wake County Schools
- Beth Hamilton, Computer Resource Teacher McAllister Elementary School, Cabarrus County Schools
- Susan Lippard, Computer Resource Teacher, Weddington Elementary School, Cabarrus County Schools
- Janet McLendon, Computer Resource Teacher, Broad Creek Middle School, Carteret County Schools
- Faye Bell, Instructional Technology Specialist, Wayne County Schools
- Mary Forrest, Director Media/Technology Services, Carteret County Schools
- Jean White, Media and Technology Director, Cabarrus County Schools
- Caroline McCullen, Language Arts, Ligon Middle School, Wake County Schools
- Karen Creech, Teacher on Loan, NCDPI
- Libby Michaels, Davidson County Schools
- Glenn Craver, Davidson County Schools
- Mary Ostwalt, Teacher on Loan, NCDPI
- Jimmy Smith, Business and Marketing, Instructional Services, NCDPI
- Judy LeCroy, Media and Technology Director, Davidson County Schools
- Doris Tyler, Accountability Services, NCDPI
- Karen Creech, Teacher on Loan, NCDPI
- David Warlick, Parent Representative
- Molly Munro, North Carolina State University
- Gail Morse, Public School Forum of North Carolina
- D. J. Midget, Director of Instructional Technology, Rowan-Salisbury Schools
- Sue Spencer, Director Media/Technology, Randolph County Schools
- Marjorie DeWert, University of North Carolina at Chapel Hill

- the many educators statewide who participated in the current revision process by working with the curriculum committee, by responding to surveys, attending focus groups and reacting to draft documents

- the faculty from the institutions of higher education who advised the staff and assisted in the revision of curriculum

- those who participated in public hearings
  the Raleigh-based staff in Arts Education, English, Language Arts, Exceptional Children, Healthful Living, School Instructional Technology Planning and Integration, Information Technology Evaluation Services, Mathematics, Science, Second Languages, Social Studies, Testing and Accountability, and Workforce Development. These Public Instruction staff members collaborated with the Computer Skills Curriculum Committee to integrate computer/technology skills into content areas in a meaningful context

- the office support staff who assisted the work of the committee and processed documents for mailings

- the Division of Communications Services for technical assistance in the publication of the documents

The current revision process involved on some level the entire education community, and its end product is a North Carolina curriculum of which the state can be justifiably proud. We will constantly revise and improve the ***Standard Course of Study*** in order that it will continue to meet the needs of the children of North Carolina.

PREFACE

In fall 1996 a committee of system-level media and/or technology coordinators/directors, school administrators, representatives from institutions of higher education and classroom teachers was established to update and revise the 1992 ***K-12 Computer Skills Standard Course of Study***. An evaluation of the 1992 Computer Skills Curriculum evolved through whole-group discussion determining that the three original goals were still relevant to the learner. However, the objectives needed revision and/or a shift in where grade-level implementation should occur. The committee determined the need to reduce the number of topic strands.

In December 1996 a survey to get direct input from K-12 educators was developed and disseminated to 2000 participants and vendors at the North Carolina Educational Technology Conference. Survey results and focus group reactions were reviewed by the committee and evolved into the first draft of goals and objectives for the Computer/Technology Skills Curriculum.

This draft document was distributed among Instructional Services consultants for review and comment. Also the Computer Skills Curriculum Committee met with various Instructional Services content area specialists to get input and help with integrating relevant subject area concepts into the Computer/Technology Skills Curriculum.

Copies of the Draft Computer/Technology Skills Curriculum were distributed at seven focus group sessions at various intervals throughout the revision process to get reaction to the ongoing work of the committee and to solicit input. Focus Group sessions were conducted at the following conferences:

- North Carolina Educational Technology Conference - December 1996
- North Carolina Association for Educational Communications & Technology Conference - March 1997
- East Carolina University Teaching and Technology Conference - April 1997
- North Carolina Science Teachers Conference - November 1997
- North Carolina Educational Technology Conference - December 1997
- North Carolina Association for Educational Communications & Technology Conference - February 1998
- North Carolina Middle Schools Association Conference - March 1998

An update of the curriculum development process was presented and copies of the Draft Computer/Technology Skills Curriculum were provided at state-wide computer coordinators' meetings at the following conferences:

- North Carolina Educational Technology Conference - December 1996
- North Carolina Association for Educational Communications & Technology Conference - March 1997
- Camp Caraway retreat - July 1997
- North Carolina Educational Technology Conference - December 1997

- North Carolina Association for Educational Communications & Technology Conference - February 1998

The Computer Skills Curriculum Committee carefully reviewed input from focus group sessions and reworked and refined the language of the Computer/Technology Skills curriculum draft. A draft of the objectives by strand was mailed to system-level computer coordinators in June 1997. An in-depth analysis of the draft was conducted with technology leaders at the Camp Caraway retreat in early July, 1997. Objectives were rewritten and refined to address reactions and input from the group.

In November 1997 the entire committee reconvened to assemble and refine the complete document. Revisions were mailed to district-level technology leaders and community stakeholders in mid-November and a presentation was made to the state-wide computer coordinators' meeting at North Carolina Educational Technology Conference 1997.

In January 1998 six public hearings were conducted:

- Haywood County
- Richmond County
- Carteret County
- Charlotte/Mecklenburg
- Winston-Salem/Forsyth
- Wake County

On January 26, 1998 several members of the Computer Skills Curriculum Committee made a formal presentation of the draft to Instructional Services staff, who provided input and specific suggestions. Computer Skills Curriculum Committee met on January 30, 1998 to address issues and concerns and finalize the document.

STANDARD COURSE OF STUDY
K-12 Computer/Technology Skills

INTRODUCTION

The strength of technology is that it provides an excellent platform where students can collect information in multiple formats and then organize, link, and discover relationships among facts and events. An array of tools for acquiring information and for thinking and expression allows more students more ways to enter the learning enterprise successfully and to live productive lives in the global, digital, and information-based future they all face.[1]

OVERVIEW

The ***K-12 Computer/Technology Skills Standard Course of Study*** identifies the essential knowledge and skills that all students need to be active, life-long learners in a technology intensive environment. Technology is undergoing rapid change and new and improved technological advances appear almost daily. The curriculum is designed to form the foundation for continuous learning and to be applicable to ever-changing innovations. Computer skills continue to be the primary focus of the curriculum but the title has been expanded to computer/technology skills to address multimedia and other areas beyond the computer alone.

The first separate ***Computer Skills Standard Course of Study*** was approved by the State Board of Education in 1992. This revision represents an expansion of the competencies to reflect current technologies but is also designed to incorporate future technological developments. With minor revisions, it has the same three goals as the *1992* ***Standard Course of Study*** which generally apply K-12:

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

This goal addresses the role of technology in all parts of society. Students must understand the impact of computer technology on society in a technology-based information rich world. Students must understand appropriate use of computer technology and exhibit ethical behavior in using hardware, software, and information accessing resources.

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.
This goal is concerned with fundamental computer operations and application software use that make students independent, productive, users of computer technology. Students must master certain computer operations, application software skills, know computer terms and functions, demonstrate basic keyboarding skills, and be able to use software correctly.

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[1]Statham, Dawn S., and Torell, Clark R. *Computers in the Classroom: The Impact of Technology on Student Learning*, Boise State University College of Education, p. 10.

The application software skills identified include word processing, database management, spreadsheet problem-solving, multimedia production, and accessing information resources via telecommunications.

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

This goal focuses on the application of computer/technology skills access. Students will access information using search strategies and analyze information using database, spreadsheet, and graphing software. They will then communicate and share the results through desktop publications, multimedia productions, video-conferencing, and telecommunications with audiences near and far.

The objectives under each of the three goals in the revised ***K-12 Computer/Technology Skills Standard Course of Study*** describe the progressive development of knowledge and skills in six strands: Societal Issues, Database, Spreadsheet, Keyboard Utilization/Word Processing/Desktop Publishing, Multimedia/Presentation , and Telecommunications. In the primary grades, the objectives focus on the essential skills; in the upper elementary and middle grades, the objectives build upon those skills. During the eighth grade, students should be prepared to successfully pass the computer proficiency assessment required for graduation.

It is important to note, however, that they may not have acquired all of the keyboarding proficiency required as a prerequisite for workforce development courses. At grades 9-12, the ***Standard Course of Study*** focuses on the refinement and application of the acquired computer/technology skills in preparation for work, continued learning, and personal use. The objectives at these grade levels are organized by subject area, allowing students to employ, expand, and internalize the proficiencies that they have already developed.

PHILOSOPHY

As the 21st Century approaches, computers and other technologies are having greater influence on our daily lives–at home, at work, in the community, and in schools. Whether using word processing to complete a writing assignment, a spreadsheet to display mathematical data, telecommunications to find information for a research paper, e-mail to correspond with a pen pal in another country, or multimedia for a presentation, students must acquire the technological skills for tomorrow while meeting their needs today.

In 1995, the State Board of Education published ***The New ABCs' of Public Education***, its plan for restructuring education in our state. The B in the *ABC*s' focuses instruction on the basics–specifically the mastery of reading, mathematics, and writing. Computer/technology skills represent a new "basic". When integrated with the core curricular areas, these skills enable students to improve and enhance their learning of the other basic skills.[2]

The ***Computer/Technology Skills Standard Course of Study*** involves the development of skills over time. Computer/Technology Skills proficiency is not an end in itself, but lays a foundation for life-long learning. These skills become building blocks with which to meet the challenges of personal and professional life. To become technologically proficient, the student must develop the skills over time, through integrated activities in all content areas K-12, rather than through one specific course. These skills are necessary for all students

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[2] ***The New ABC's of Public Education***, May, 1995., p. 5

and should be introduced and refined collaboratively by all K-12 teachers as an integral part of the learning process.

The proposed National Educational Technology Standards are designed to produce technology-literate students who master and integrate computer/technology skills into their personal learning and social structure throughout their education. These standards address the following basic principles and assumptions:

- Students acquire steadily increasing skills and knowledge related to the use of technology for enhancing personal and collaborative abilities.
- Students acquire steadily increasing ability to make quality decisions related to managing their own learning.
- Students acquire steadily increasing skills to work in collaboration with others, with hardware and software, information resources, and to solve problems with the support technology tools.
- Students become responsible citizens and users of technology and information.
- Students have access to current technology resources including telecommunications and multimedia enhancements.
- Students acquire skills that prepare the to learn new software and hardware technology and to adapt to complex technology environments that emerge in their lifetime.
- Students acquire skills that prepare them to learn new software and hardware technology and adapt to complex technology environments that emerge in their lifetime.[3]

The revised ***North Carolina Computer/Technology Skills Standard Course of Study*** complements the proposed national standards. Students meeting these competency goals and objectives should become:

- complex thinkers who use technology to define problems, gather data, analyze information, and interpret and evaluate results;
- effective communicators who use a variety of technologies to plan, develop, and present a product;
- self-directed learners who can independently use technology to meet present and future needs; and
- contributing citizens who understand the ethical issues and societal impact of advanced and emerging technologies.

Thus, the Computer/Technology Skills curriculum provides a foundation for enabling all students to meet technological challenges.

This document contains the Computer/Technology Skills goals and objectives by grade level, grade level strand guides, and a glossary.

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[3] ***The National Educational Technology Standards*** (NETS) Project is sponsored by the *International Society for Technology in Education* in cooperation with the U. S. Department of Education, the National Science Foundation and other national standards groups to be completed in 1998.

Standard Course of Study
K-12 Computer/Technology Skills

STRANDS: SI = Societal Issues; KU/WP/DTP = Keyboard Utilization/Word Processing/Desk Top Publishing; DB = Database; SS = Spreadsheet; T = Telecommunications; M/P = Multimedia/Presentation

GRADE LEVEL: KINDERGARTEN

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Identify the computer as a machine that helps people work and play. (SI)
1.2 Identify the physical components of a computer system. (SI)
1.3 Demonstrate respect for the work of others. (SI)
1.4 Demonstrate correct care and use of computers. (SI)
1.5 Identify word processing software as a tool for writing. (KU/WP/DTP)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Locate and use letters, numbers, and special keys on a keyboard. (KU/WP/DTP)
2.2 Place the cursor at a specified location. (KU/WP/DTP)
2.3 Identify items by different attributes using manipulatives and/or software. (SS)
2.4 Recognize the characteristics of multimedia. (M/P)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Group items by different attributes using manipulatives and/or software. (SS)
3.2 Arrange a picture story in sequential/linear order. (M/P)

Grade Level Focus Areas
- *Parts of the computer and how to operate*
- *Keyboard familiarity*
- *Grouping and sequencing*
- *Respect for the work of others*

Standard Course of Study
K-12 Computer/Technology Skills

STRANDS: SI = Societal Issues; KU/WP/DTP = Keyboard Utilization/Word Processing/Desk Top Publishing; DB = Database; SS = Spreadsheet; T = Telecommunications; M/P = Multimedia/Presentation

GRADE LEVEL: 1

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Identify uses of technology at home and at school. (SI)
1.2 Discuss ownership of computer-created work. (SI)
1.3 Identify physical components of a computer system. (SI)
1.4 Identify the Internet as a source of information. (T)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Identify and discuss fundamental computer terms. (SI)
2.2 Locate and use letters, numbers, and special keys on a keyboard. (KU/WP/DTP)
2.3 Identify basic word processing terms. (KU/WP/DTP)
2.4 Key words and/or sentences using word processing. (KU/WP/DTP)
2.5 Participate in the creation of a class multimedia sequential/linear story. (M/P)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Group items by different attributes using manipulatives and/or software. (SS)
3.2 Gather, organize, and display data. (SS)

Grade Level Focus Areas
- *Using technology at home and school*
- *Gathering, organizing, and displaying data*
- *Using word processing*
- *Exploring multimedia*

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GRADE LEVEL: 2

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Identify uses of technology in the community. (SI)
1.2 Recognize an individual's rights of ownership to computer-generated work. (SI)
1.3 Identify how electronic databases are used in the school, neighborhood, and community. (DB)
1.4 Identify print and electronic databases as ways to collect, organize, and display data. (DB)
1.5 Identify how telecommunications has changed the ways people work and play. (T)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Identify essential computer terms. (SI)
2.2 Identify the function of physical components of a computer system. (SI)
2.3 Demonstrate correct finger placement for home row keys. (KU/WP/DTP)
2.4 Use word processing to enter, save, print, and retrieve text. (KU/WP/DTP)
2.5 Use electronic databases to locate information. (DB)
2.6 Use a graphing program to enter data and graph the results. (SS)
2.7 Identify and use electronic drawing tools to combine graphics and text. (M/P)
2.8 Participate in the planning and creation of a class multimedia story which includes student narration. (M/P)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Collect, sort, and organize information to display as a graph or chart. (SS)
3.2 Interpret data on charts/graphs and make predictions. (SS)

Grade Level Focus Areas
- *Using technology in the community*
- *Using electronic database to locate information*
- *Building word processing skills*
- *Collecting, sorting, and displaying data*
- *Exploring multimedia (graphics, sound, text)*
- *Using drawing tools*

STRANDS: SI = Societal Issues; KU/WP/DTP = Keyboard Utilization/Word Processing/Desk Top Publishing; DB = Database; SS = Spreadsheet; T = Telecommunications; M/P = Multimedia/Presentation

GRADE LEVEL: 3

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Identify uses of technology in the community and how it has changed people's lives. (SI)
1.2 Recognize that the Copyright Law protects what a person, group, or company has created. (SI)
1.3 Recognize the benefits of word processing. (KU/WP/DTP)
1.4 Recognize how electronic databases are used in the community. (DB)
1.5 Identify telecommunications technologies used to locate information. (T)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Identify the technology tools used to collect, analyze, and display data. (SI)
2.2 Identify the physical components of a computer system as either input, output, or processing devices. (SI)
2.3 Demonstrate proper keyboarding techniques for upper and lower case letters. (KU/WP/DTP)
2.4 Retrieve and edit a word processed document. (KU/WP/DTP)
2.5 Recognize the differences between print and electronic databases. (DB)
2.6 Identify the parts of a spreadsheet. (SS)
2.7 Enter and edit data in a prepared spreadsheet and observe the results. (SS)
2.8 Create a multiple-outcome storyboard as a class activity. (M/P)
2.9 Identify the difference between linear and nonlinear multimedia presentations. (M/P)
2.10 Create a multimedia project as a group/class activity. (M/P)
2.11 Use telecommunications to locate community information as a group/class project. (T)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Create, save, and print a word processed document. (KU/WP/DTP)
3.2 Locate and use information in electronic databases. (DB)
3.3 Use a prepared spreadsheet to enter and graph data as a group activity. (SS)
3.4 Evaluate the usefulness of information obtained using telecommunication technologies. (T)

Grade Level Focus Areas
- *Awareness of Copyright Law*
- *Exploring information technologies*
- *Building word processing techniques*
- *Exploring spreadsheets*

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GRADE LEVEL: 4

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Identify the ways in which technology has changed the lives of people in North Carolina. (SI)
1.2 Identify and understand the differences between non-networked and networked computers. (SI)
1.3 Identify violations of the Copyright Law. (SI)
1.4 Recognize the correct use of copyrighted materials in multimedia products. (M/P)
1.5 Identify the need for Acceptable Use Policies (AUP). (SI)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Use technology tools used to collect, analyze, and display data. (SI)
2.2 Practice proper keyboarding techniques for upper and lower case letters. (KU/WP/DTP)
2.3 Recognize word processing terms and functions. (KU/WP/DTP)
2.4 Edit a word processing file to make indicated corrections. (KU/WP/DTP)
2.5 Define the parts of a database. (DB)
2.6 Develop a simple database and enter and edit information as a class activity. (DB)
2.7 Define spreadsheet terms. (SS)
2.8 Enter data into a prepared spreadsheet to perform calculations (+,-,*,/) and recognize the changes that occur. (SS)
2.9 Use e-mail as a means of communications. (T)
2.10 Use search strategies to locate information electronically. (T)
2.11 Recognize the differences between non-networked and networked computers. (SI)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Create, format, save, and print a word processed document. (KU/WP/DTP)
3.2 Search and sort prepared databases for information to use in classroom projects. (DB)
3.3 Create a table/graph from spreadsheet data. (SS)
3.4 Create a multimedia project and cite sources of copyrighted material. (M/P)
3.5 Evaluate information found via telecommunications for content and usefulness. (T)

Grade Level Focus Areas
- *Using databases*
- *Using spreadsheets*
- *Locating information on the Internet*
- *Evaluating information found through telecommunications*
- *Developing word processing documents*
- *Exploring e-mail*
- *Identifying ways technology has changed North Carolina*

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GRADE LEVEL: 5

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Recognize the influence of technology on life in the United States. (SI)
1.2 Recognize the need for protection of software and hardware from computer viruses and vandalism. (SI)
1.3 Recognize video Conferencing as a method of interactive communication. (T)
1.4 Describe the use of Acceptable Use Policy (AUP). (SI)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Use technology tools to collect, analyze, and display data. (SI)
2.2 Explain the differences between a non-networked and networked computer. (SI)
2.3 Use keyboarding skills to improve speed and accuracy. (KU/WP/DTP)
2.4 Use a word processing application to create and format a document. (KU/WP/DTP)
2.5 Create/modify an electronic database. (DB)
2.6 Search and sort information using one criterion. (DB)
2.7 Add and delete records in a database. (DB)
2.8 Create/modify and use spreadsheets to perform calculations (+,-,*, /). (SS)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Create a product using information located in a database. (DB)
3.2 Evaluate the accuracy, credibility, and validity of data in a database. (DB)
3.3 Select search strategies to obtain information. (DB)
3.4 Select the most appropriate graph to display data and state reason. (SS)
3.5 Create modify a multimedia presentation citing sources of copyrighted materials. (M/P)
3.6 Participate in curriculum-based telecommunications projects as a class activity. (T)
3.7 Evaluate information found via telecommunications for appropriateness, content, and usefulness. (T)

Grade Level Focus Areas
- *Using search strategies*
- *Exploring the need for protection against viruses and vandalism*
- *Participating in curriculum-based telecommunication projects*
- *Developing word processing document using proper keyboarding techniques*
- *Developing multimedia presentation citing sources*
- *Developing a product using a database*

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GRADE LEVEL: 6

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Recognize ownership, security, and privacy issues. (SI)
1.2 Demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects, and multimedia presentations. (SI)
1.3 Model ethical behavior relating to security, privacy, passwords, and personal information. (SI)
1.4 Identify uses of technology in the workplace. (SI)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Use keyboarding skills to increase productivity and accuracy. (KU/WP/DTP)
2.2 Create/modify a database relevant to classroom assignments. (DB)
2.3 Search and sort information using more than one criterion and explain strategies used to locate information. (DB)
2.4 Enter and edit data into a prepared spreadsheet to test simple "what if" statements. (SS)
2.5 Use order of operations in spreadsheet formulas. (SS)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Select and use technology tools to collect, analyze, and display data. (SI)
3.2 Use word processing/desktop publishing applications to create documents related to content areas. (KU/WP/DTP)
3.3 Use information located in database files to create/modify a personal product. (DB)
3.4 Create/modify and use spreadsheets to solve real-world problems. (SS)
3.5 Select most appropriate type of graph to display data and state the reason. (SS)
3.6 Create nonlinear multimedia projects related to content areas. (M/P)
3.7 Evaluate electronic information from various sources as to validity, appropriateness, content, and usefulness. (T)
3.8 Apply search strategies to locate and retrieve information via telecommunications. (T)
3.9 Use telecommunications to share and publish information. (T)

Grade Level Focus Areas
- *Refining application skills*
- *Using formulas in a spreadsheet*
- *Using search strategy with more than one factor in a database*
- *Increasing productivity and accuracy in keyboarding*
- *Using word processing, spreadsheet, database, and multimedia for assignments in all subject areas*
- *Locating and retrieving information using telecommunications*

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GRADE LEVEL: 7

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Demonstrate ethical behavior relating to security, privacy, passwords, and personal information. (SI)
1.2 Demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects, and multimedia presentations. (SI)
1.3 Describe the impact of technology on the skills needed for the workplace.(SI)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Enter and edit data into a prepared spreadsheet to test simple "what if" statements. (SS)
2.2 Select appropriate spreadsheet functions to solve problems. (SS)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Select and use technology tools to collect, analyze, and display data. (SI)
3.2 Use word processing/desktop publishing for assignments/projects. (KU/WP/DTP))
3.3 Research, create, publish, and present projects related to content areas using a variety of technological tools. (KU/WP/DTP/DB/SS/MM/T)
3.4 Search and sort information using more than one criterion and explain strategies used to find information. (DB)
3.5 Create/modify and use a database relevant to a classroom assignment. (DB)
3.6 Create/modify and use spreadsheets to solve problems related to content areas. (SS)
3.7 Choose charts/tables or graphs to best represent data and state reason. (SS)
3.8 Evaluate the information from electronic sources as to validity, appropriateness, content, and usefulness. (T)

Grade Level Focus Areas
- *Using ethical behavior in the use of technology resources*
- *Using appropriate spreadsheet functions to solve problems related to content areas*
- *Selecting and using technology tools to collect, analyze, and display data*
- *Using a variety of technological tools to develop projects in content areas*

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GRADE LEVEL: 8

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Model ethical behavior relating to security, privacy, passwords, and personal information. (SI)
1.2 Demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects, and multimedia presentations. (SI)
1.3 Investigate occupations dependent on technology.(SI)

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Create/modify and print a database report. (DB)

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

3.1 Select and use technology tools to collect, analyze, and display data. (SI)
3.2 Use word processing/desktop publishing for assignments/projects. (KU/WP/DTP))
3.3 Research, create, publish, and present projects related to content areas using a variety of technological tools. (KU/WP/DTP/DB/SS/MM/T)
3.4 Create/modify and use databases relevant to classroom assignments. (DB)
3.5 Apply search and sort strategies used in a database. (DB)
3.6 Create/modify and use spreadsheets to solve problems related to content areas. (SS)
3.7 Explain the rationale for choosing charts/tables or graphs to best represent data. (SS)
3.8 Use spreadsheets to explore various formulas/functions and relationships. (SS)
3.9 Conduct online research and evaluate the information found as to the validity, appropriateness, content, and usefulness. (T)

Grade Level Focus Areas

- *Using spreadsheets and databases relevant to classroom assignments*
- *Choosing charts/tables or graphs to best represent data*
- *Conducting online research and evaluating the information found*
- *Using word processing/desktop publishing for classroom assignments/projects*
- *Using a variety of technological tools to develop projects in content areas*

GRADE LEVEL 9-12

Subject Area Objectives

COMPETENCY GOAL 1: The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Practice ethical behavior in using computer-based technology for class assignments and projects.
1.2 Identify issues surrounding complex technology environments.

COMPETENCY GOAL 2: The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Practice and refine knowledge and skills in keyboarding/word processing/desktop publishing, spreadsheets, databases, multimedia, and telecommunications in preparing classroom assignments and projects.
2.2 Select and use appropriate technology tools to efficiently collect, analyze, and display data.

COMPETENCY GOAL 3: The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

Arts Education (Dance, Music, Theatre Arts, Visual Arts)
3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data.
3.2 Select and use appropriate technologies as a means of artistic expression.
3.3 Use electronic resources for research.
3.4 Use technological tools for class assignments, projects, and presentations.
3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

English
3.1 Use word processing and/or desktop publishing for a variety of writing assignments/projects.
3.2 Use electronic resources for research.
3.3 Select and use technological tools for class assignments, projects, and presentations.
3.4 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Foreign Languages
3.1 Select and use appropriate technologies to communicate in other languages with other cultures.
3.2 Select and use technological tools for class assignments, projects, and presentations.
3.3 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Health/Physical Education

3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data.
3.2 Use technology for experiments and/or research.
3.3 Use electronic resources for research.
3.4 Select and use technological tools for class assignments, projects, and presentations.
3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Mathematics

3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data.
3.2 Use spreadsheets to solve problems and display data.
3.3 Use a calculator, scientific calculator, or graphing calculator for problem-solving.
3.4 Select and use technological tools for class assignments, projects, and presentations.
3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Science

3.1 Use scientific instruments to perform experiments.
3.2 Use appropriate technology tools to efficiently collect, analyze, and display data.
3.3 Use electronic resources for research.
3.4 Use spreadsheets and/or databases to collect, record, analyze, and present data.
3.5 Select and use technology tools for class presentations.
3.6 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Social Studies

3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data.
3.2 Use databases to collect, record, analyze, and display data.
3.3 Use electronic resources for research.
3.4 Select and use technological tools for class assignments, projects, and presentations.
3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Workforce Development (Agricultural Education, Business and Marketing, Industrial Technology and Human Services, Biotechnology, Health Care, and Career Development)

3.1 Select and use appropriate technologies to prepare for the workplace.
3.2 Use electronic resources for research.
3.3 Select and use technological tools for class assignments, projects, and presentations.
3.4 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

Kindergarten Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Identify the computer as a machine that helps people work and play. (G1) 1.2...Identify the physical components of a computer system. (G1) 1.3...Demonstrate respect for the work of others. (G1) 1.4...Demonstrate correct care and use of computers. (G1)		2.3...Identify items by different attributes using manipulatives and/or software. (G2) 3.1...Group items by different attributes using manipulatives and/or software. (G3)	1.5...Identify word processing software as a tool for writing. (G1) 2.1...Locate and use letters, numbers, and special keys on a keyboard. (G2) 2.2...Place the cursor at a specified location. (G2)	2.4...Recognize the characteristics of multimedia. (G2) 3.2...Arrange a picture story in sequential/linear order. (G3)	

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

1st Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Identify uses of technology at home and at school. (G1) 1.2...Discuss ownership of computer-created work. (G1) 1.3...Identify physical components of a computer system. (G1) 2.1...Identify and discuss fundamental computer terms. (G2)		3.1...Group items by different attributes using manipulatives and/or software. (G3) 3.2...Gather, organize, and display data. (G3)	2.2...Locate and use letters, numbers, and special keys on a keyboard. (G2) 2.3...Identify basic word processing terms. (G2) 2.4...Key words and/or sentences using word processing. (G2)	2.5...Participate in the creation of a class multimedia sequential/linear story. (G2)	1.4...Identify the Internet as a source of information. (G1)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

Grade Level Strand Guide

Grade 2

2nd Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Identify uses of technology in the community. (G1) 1.2...Recognize an individual's rights of ownership to computer-generated work. (G1) 2.1...Identify essential computer terms. (G2) 2.2...Identify the function of physical components of a computer system. (G2)	1.3...Identify how electronic databases are used in the school, neighborhood, and community. (G1) 1.4...Identify print and electronic databases as ways to collect, organize, and display data. (G1) 2.5...Use electronic databases to locate information. (G2)	2.6...Use a graphing program to enter data and graph the results. (G2) 3.1...Collect, sort, and organize information to display as a graph or chart. (G3) 3.2...Interpret data on charts/graphs and make predictions. (G3)	2.3...Demonstrate correct finger placement for home row keys. (G2) 2.4...Use word processing to enter, save, print, and retrieve text (G2)	2.7...Identify and use electronic drawing tools to combine graphics and text. (G2) 2.8...Participate in the planning and creation of a class multimedia story which includes student narration. (G2)	1.5...Identify how telecommunications has changed the ways people work and play. (G1)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

3rd Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Identify uses of technology in the community and how it has changed people's lives. (G1) 1.2...Recognize that the Copyright Law protects what a person, group, or a company has created. (G1) 2.1...Identify the technology tools used to collect, analyze, and display data. (G2) 2.2...Identify the physical components of a computer system as either input, output, or processing devices. (G2)	1.4...Recognize how electronic databases are used in the community. (G1) 2.5...Recognize the differences between print and electronic databases. (G2) 3.2...Locate and use information in electronic databases. (G3)	2.6...Identify the parts of a spreadsheet. (G2) 2.7...Enter and edit data in a prepared spreadsheet and observe the results. (G2) 3.3...Use a prepared spreadsheet to enter and graph data as a group activity. (G3)	1.3...Recognize the benefits of word processing. (G1) 2.3...Demonstrate proper keyboarding techniques for upper and lowercase letters. (G2) 2.4...Retrieve and edit a word processed document.(G2) 3.1...Create, save, and print a word processed document. (G3)	2.8...Create a multiple-outcome storyboard as a class activity. (G2) 2.9...Identify the difference between linear and nonlinear multimedia presentations. (G2) 2.10...Create a multimedia project as a group/class activity. (G2)	1.5...Identify telecommunications technologies used to locate information. (G1) 2.11...Use telecommunications to locate community information as a group/class project. (G2) 3.4...Evaluate the usefulness of information obtained using telecommunication technologies. (G3)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

4th Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Identify the ways in which technology has changed the lives of people in North Carolina. (G1) 1.2...Identify the differences between non-networked and networked computers. (G1) 1.3...Identify violations of the Copyright Law. (G1) 1.5...Identify the need for Acceptable Use Policies (AUP). (G1) 2.11...Recognize the differences between non-networked and networked computers. (G2)	2.5...Define the parts of a database. (G2) 2.6...Develop a simple database and enter and edit information as a class activity. (G2) 3.2...Search and sort prepared databases for information to use in classroom projects. (G3)	2.1...Use technology tools used to collect, analyze, and display data. (G2) 2.7...Define spreadsheet terms. (G2) 2.8...Enter data into a prepared spreadsheet to perform calculations and recognize the changes that occur.(+,-,*,/) (G2) 3.3...Create a table/graph from spreadsheet data. (G3)	2.2...Practice proper keyboarding techniques for upper and lower case letters. (G2) 2.3...Recognize word processing terms and functions. (G2) 2.4...Edit a word processing file to make indicated corrections. (G2) 3.1...Create, format, save and print a word processed document. (G3)	1.4...Recognize the correct use of copyrighted materials in multimedia products. (G1) 3.4...Create modify a multimedia project and cite sources of copyrighted material. (G3)	2.9...Use e-mail as a means of communications. (G2) 2.10...Use search strategies to locate information electronically. (G2) 3.5...Evaluate information found via telecommunications for content and usefulness. (G3)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

5th Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Recognize the influence of technology on life in the United States. (G1) 1.2...Recognize the need for protection of software and hardware from computer viruses and vandalism. (G1) 1.4...Describe the use of Acceptable Use Policy (AUP). (G1) 2.2...Explain the differences between a non-networked and networked computer. (G2)	2.5...Create/modify an electronic database. (G2) 2.6...Search and sort information using one criterion. (G2) 2.7...Add and delete records in a database. (G2) 3.1...Create a product using information located in a database. (G3) 3.2...Evaluate the accuracy, credibility, and validity of data in a database. (G3) 3.3...Select search strategies to obtain information. (G3)	2.1...Use technology tools to collect, analyze, and display data. (G2) 2.8...Create/modify and use spreadsheets to perform calculations (+,-,*, /). (G2) 3.4...Select the most appropriate graph to display data and state reason. (G3)	2.3...Use keyboarding skills to improve speed and accuracy. (G2) 2.4...Use a word processing application to create and format a document. (G2)	3.5...Create a multimedia presentation citing sources of copyrighted materials. (G3)	1.3...Recognize video Conferencing as a method of interactive communication. (G1) 3.6...Participate in curriculum-based telecommunications projects as a class activity. (G3) 3.7...Evaluate information found via telecommunications for appropriateness, content, and usefulness. (G3)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

6th Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Recognize ownership, security, and privacy of information. (G1) 1.2... Demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1) 1.3...Model ethical behavior relating to security, privacy, passwords, and personal information. (G1) 1.4...Identify uses of technology in the workplace. (G1) 3.1...Select and use technology tools to collect, analyze, and display data. (G3)	2.2...Create/modify a database relevant to classroom assignments. (G2) 2.3...Search and sort information using more than one criterion and explain strategies used to locate information. (G2) 3.3...Use information located in database files to create/modify a personal product. (G3)	2.4...Enter and edit data into a prepared spreadsheet to test simple "what if" statements. (G2) 2.5...Use order of operations in spreadsheet formulas. (G2) 3.4...Create/modify and use spreadsheets to solve real-world problems. (G3) 3.5...Select most appropriate type of graph to display data and state the reason. (G3)	2.1...Use keyboarding skills to increase productivity and accuracy. (G2) 3.2...Use word processing/desktop publishing applications to create documents related to content areas. (G3)	3.6...Create nonlinear multimedia projects related to content areas. (G3)	3.7...Evaluate electronic information from various sources as to validity, appropriateness, content, and usefulness. (G3) 3.8...Apply search strategies to locate and retrieve information via telecommunications. (G3) 3.9...Use telecommunications to share and publish information. (G3)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

7th Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1...Demonstrate ethical behavior relating to security, privacy, passwords, and personal information. (G1) 1.2... Demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1) 1.3...Describe the impact of technology on the skills needed for the workplace.(G1) 3.1...Select and use technology tools to collect, analyze, and display data. (G3)	3.4...Search and sort information using more than one criterion and explain strategies used to find information. (G3) 3.5...Create/modify and use a database relevant to a classroom assignment. (G3)	2.1...Enter and edit data into a prepared spreadsheet to test simple "what if" statements. (G2) 2.2...Select appropriate spreadsheet functions to solve problems. (G2) 3.6...Create/modify and use spreadsheets to solve problems related to content areas. (G3) 3.7...Choose charts/tables or graphs to best represent data and state reason. (G3)	3.2...Use word processing/desktop publishing for assignments/projects. (G3)	3.3...Research, create, publish, and present projects related to content areas using a variety of technological tools. (G3)	3.8...Evaluate the information from electronic sources as to validity, appropriateness, content, and usefulness. (G3)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

8th Grade Objectives

The student will...

Societal Issues	Databases	Spreadsheet	Keyboard Utilization/Word Processing/DTP	Multimedia/ Presentation	Telecommunications
1.1... Model ethical behavior relating to security, privacy, passwords, and personal information. (G1) 1.2... Demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1) 1.3...Investigate occupations dependent on technology.(G1) 3.1...Select and use technology tools to collect, analyze, and display data. (G3)	2.1...Create/modify and print a database report. (G2) 3.4...Create/modify and use databases relevant to classroom assignments. (G3) 3.5...Apply search and sort strategies used in a database. (G3)	3.6...Create/modify and use spreadsheets to solve problems related to content areas . (G3) 3.7...Explain the rationale for choosing charts/tables or graphs to best represent data. (G3) 3.8...Use spreadsheets to explore various formulas/functions and relationships. (G3)	3.2...Use word processing/desktop publishing for assignments/projects. (G3)	3.3...Research, create, publish, and present projects related to content areas using a variety of technological tools. (G3)	3.9...Conduct online research and evaluate the information found as to the validity, appropriateness, content and usefulness. (G3)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

Grades 9-12

Subject Area Objectives

The student will...

ALL SUBJECT AREAS
1.1...Practice ethical behavior in using computer-based technology for class assignments and projects. (G1) 1.2...Identify issues surrounding complex technology environments. (G1) 2.1...Practice and refine knowledge and skills in keyboarding/word processing/desktop publishing, spreadsheets, databases, multimedia and telecommunications in preparing classroom assignments and projects. (G2) 2.2...Select and use appropriate technology tools to efficiently collect, analyze, and display data. (G2)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

Grades 9-12

Subject Area Objectives

The student will...

Arts Education (Dance, Music, Theatre Arts, Visual Arts)	English	Foreign Language	Health/Physical Education
3.1...Select and use appropriate technology tools to efficiently collect, analyze, and display data. (G3) 3.2...Select and use appropriate technologies as a means of artistic expression. (G3) 3.3...Use electronic resources for research. (G3) 3.4...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.5... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)	3.1...Use word processing and/or desktop publishing for a variety of writing assignments/projects. (G3) 3.2...Use electronic resources for research. (G3) 3.3...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.4... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations (G1)	3.1...Select and use appropriate technologies to communicate in other languages with other cultures. (G3) 3.2...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.3... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)	3.1...Select and use appropriate technology tools to efficiently collect, analyze, and display data. (G3) 3.2...Use technology for experiments and/or research. (G3) 3.3...Use electronic resources for research. 3.4...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.5... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

Grades 9-12

Subject Area Objectives

The student will...

Mathematics	Science	Social Studies	Workforce Development (Agriculture, Business, Technology, Health)
3.1...Select and use appropriate technology tools to efficiently collect, analyze, and display data. (G3) 3.2...Use spreadsheets to solve problems and display data. (G3) 3.3...Use a calculator, scientific calculator or graphing calculator for problem-solving. (G3) 3.4...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.5... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)	3.1...Use scientific instruments to perform experiments. (G3) 3.2...Use appropriate technology tools to efficiently collect, analyze, and display data. (G3) 3.3...Use electronic resources for research. (G3) 3.4...Use spreadsheets and/or databases to collect, record, analyze, and present data. (G3) 3.5... Select and use technological tools for class assignments, projects, and presentations. (G3) 3.6... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)	3.1...Select and use appropriate technology tools to efficiently collect, analyze, and display data. (G3) 3.2...Use databases to collect, record, analyze and display data. (G3) 3.3...Use electronic resources for research. (G3) 3.4...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.5... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)	3.1...Select and use appropriate technologies to prepare for the workplace. (G3) 3.2...Use electronic resources for research. (G3) 3.3...Select and use technological tools for class assignments, projects, and presentations. (G3) 3.4... Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations. (G1)

Goal 1=(G1)
Goal 2=(G2)
Goal 3=(G3)

Computer/Technology Standard Course of Study
Glossary

Acceptable Use Policy (AUP)
Policies adopted by school districts to address Internet usage. Acceptable Use Policy (AUP) is an agreement between the user (students and/or teachers) and the school and/or school district requiring responsible use of Internet access. Typically AUP agreements are signed for students by their parent(s) or guardian.

chart/graph
Provide a pictorial representation of data, making it easy to see significant trends, for example. Today, spreadsheet programs are often used to create the following types of graphs: bar, area, line, scatter, pie, stacked bar, and stacked area.

computer
An electronic machine that can perform calculations and can process a large amount of information accurately and much more rapidly than the human brain.

computer vandalism
Act of damaging, altering, or destroying a computer, computer-peripherals, computer software or computer service.

computer virus
A computer program that can reproduce by changing other programs to include a copy of itself. It is a parasite program, needing another program to survive.

Copyright Law
Law granting a legal right to a copyright holder which requires the permission of the copyright holder to make non-archival copies of the work in question.

Computer/Technology Standard Course of Study
Glossary

copyrighted material
Material protected by copyright laws.

cursor
A highlighted or bright (sometimes blinking) line or mark that shows where information is being input; that is, where the next letter or character will appear. Sometimes the cursor is a special picture or icon.

data
A general term for pieces of information that a computer processes.

database
A collection of data organized for search and retrieval. Electronic databases are accessed by computer; print databases are available in printed format.

desktop publishing application
A computerized layout program that integrates graphics and text to produce a professional looking document.

document
The file that is created or modified with an application. Examples are a letter, a drawing, or a mailing list.

Computer/Technology Standard Course of Study
Glossary

drawing tools
Tools found in a drawing or painting program, used to draw lines, rectangles, ovals, arcs, and polygons.

e-mail
Private messages, called electronic mail, that are sent and received over a computer network.

electronic database
a collection of data organized for search and retrieval. Electronic databases are accessed by computer. Examples: CD-ROM encyclopedia, SIRS,

electronic information
Disk based information for onscreen use.

emerging technologies
Technologies that are in the developmental stages, not in widespread use, or have not been invented yet.

enter
To type an item of information into a field in a database, or to type text into a document.

Computer/Technology Standard Course of Study
Glossary

ethical issues
Issues conforming to accepted professional standards of conduct.

Fair Use and Multimedia Guidelines
The fair use doctrine provides educators with the right to make reasonable copies of copyrighted materials without specific consent of the author for purposes of criticism, comment, news reporting, teaching, scholarship, or research. The guidelines permit the use of copyrighted works in teaching, if certain factors are considered, including: • the purpose and character of the use, e.g., commercial vs. educational • the nature of the copyrighted work • the amount of the work copied in relation to the work as a whole • the effect of use on the potential market for, or value of the work.

format
Controls the overall appearance of a document, including margins, text size, style and font, headers, and footers.

formula
A type of information that can be entered into a spreadsheet cell. It is a mathematical equation consisting of numbers, other cell designators, and symbols for mathematical operations. The result of the formula is displayed in the cell that holds the formula.

function
A built-in formula that enables the user to perform complex calculations. Examples: SUM, AVERAGE, MIN

graphics
The display of pictures, shapes, and colors to convey information.

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Glossary

hardware
The physical equipment of a computer, such as the monitor, the keyboard, the Central Processing Unit, the printer, and the storage devices.

home row keys
The starting point for your hands when beginning to keyboard using common keying techniques. The keys on the keyboard *a, s, d, f, j, k, l, and ;* are home row keys.

input
1. The process of entering information into a computer.
2. The information entered or put into a computer for processing.

intellectual property
Ideas put into action, such as writing, music, art, computer code, and inventions, that can be protected under copyright or patent laws.

Internet
A global network of thousands of other computer networks that offers e-mail and information retrieval services to millions of people.

keyboard
An input device resembling a typewriter and consisting of a standardized layout of buttons or keys with symbols, such as letters or numbers, that can be entered into a computer by pressing on the keys.

Computer/Technology Standard Course of Study
Glossary

keyboard familiarity
The act of developing knowledge about the location of keys on the computer keyboard and the functions of these keys.

local area network (LAN)
A group of computers, connected by cables, set up to communicate with one another.

modem
A device that permits a computer to transmit and receive data over a telephone line.

multimedia
Any presentation or program that combines several media, such as graphics, sound, video, animation, and/or text.

multimedia sequential/linear story
A story or presentation where each event occurs in sequence. To move from one part of the presentation to another, the user steps through the presentation, either forwards or backwards, one event/page at a time.

multiple outcome storyboard
Based on a choice of values listed in a box on a storyboard, different events occur.

Computer/Technology Standard Course of Study
Glossary

networked computers
A system of computers linked together to share data, software, and hardware.

non-networked computers
Also called stand alone computers. The computers are not linked to other computers. To utilize resources such as printers, modems, scanners etc., each computer requires its own devices.

nonlinear
Not in order by time or event. Events may occur in any sequence.

online research
Research that utilizes primary and secondary electronic resources such as CD-ROM, intranet, and internet encyclopedias, dictionaries, databases, video conferencing, email, etc.

order of operations
The order in which a mathematical expression is evaluated. Expressions are evaluated from left to right in the following order: parentheses, exponents/powers, multiplication and division, addition and subtraction.

output
1) The process of displaying, printing, or storing information produced by a computer.
2) The information produced by a computer, as a result of processing, that is sent to devices that display, print, or store it.

Computer/Technology Standard Course of Study
Glossary

ownership of information
See Copyright Laws

parts of a database
A database is a group of records that contain fields of information.
record: a collection or listing of related categories or fields in a database file.

field: an item of information or data in a record of a database file.

password
A secret word or phrase used to access information stored on a computer or computer network.

prepared document
A computer document or file that has been previously created, usually for a specific purpose. Prepared documents can be used to find, edit, or manipulate information.

Presentation
An oral report that may include audio, text, graphics and the use of a presentation software application.

print
1. A mark or impression made upon a surface by pressure or other means.
2. To send information to a printer.
3. Published form.

Computer/Technology Standard Course of Study
Glossary

print database
A collection of printed data organized for search and retrieval. Examples: telephone book, encyclopedia, address book.

privacy of information
The privacy protection is both a personal and fundamental right of all individuals. Individuals have a right to expect that organizations will keep personal information confidential. One way to ensure this is to require that organizations will collect, maintain, use, and disseminate identifiable personal information and data only as necessary to carry out their functions. In the United States the Federal privacy policy is guided by two key legislations:
Freedom of Information Act of 1966 and The Privacy Act of 1974.

processing devices
Devices that manipulate data in accordance with the instructions of the computer or a program. The main component, the central processing unit (CPU) or "brain" of a computer. It is the chip that performs all the information processing. The piece of hardware that contains the CPU is often called the CPU, or system unit.

relationship
The comparison of two pieces of information using logical operators. (<,>,<>,=, ≥, ≤).

retrieve
To find and bring back information that has previously been stored on a disk or hard drive. To load a file from a disk or hard drive.

save
A software feature used to save data on a hard drive or floppy disk.

Computer/Technology Standard Course of Study
Glossary

search
The process of finding all records of a database that meet a certain rule, statement, or criterion. A search may be based on a single statement, rule, or criterion, or a combination of statements, rules, and criteria joined by "and"' and "or". This process is also called find, query, or match in some database software.

security of information
The practice of not sharing how to access information stored on a computer or computer network. The use of passwords or security services such as encryption to keep unauthorized individuals from gaining access to information stored on a computer or computer network.

sequential/linear order
To arrange pictures, events, words, etc. in the order in which they occur over time.

societal impact of technology
The effect that technology has on local, state, national, or international affairs over a period of time.

software
Computer programs that tell a computer what to do; instructions to the CPU to tell it what to do with the data it receives.

sort
A process of organizing the records in a database in a specific order, either alphabetically (from A to Z or reverse alphabetically from Z to A) or numerically (from 0 to 9 or reverse numerically from 9 to 0).

Computer/Technology Standard Course of Study
Glossary

spreadsheet
1. A software program that is used to process financial or mathematical information.
2. Organizing information in rows and columns to form a table.

spreadsheet terms/parts of a spreadsheet
A spreadsheet is a table of information arranged in rows and columns. Information arranged horizontally is called a row; information arranged vertically is called a column. The box formed where a row and column meet is called a cell. Each cell contains data.

storyboard
A graphic organizer for planning a multimedia presentation. The contents, layout, and formatting of each card/page/slide and the linking together of the pages/cards/slides is determined prior to using the applications software.

table/graph
A visual display of information or data that is organized in a table, consisting of rows and columns. Examples: bus schedule, classroom seating chart, multiplication table.

technology
Technology is not an independent science, having a set of doctrines of its own, but consists of applications of the principles established in the various physical sciences (chemistry, mechanics, mineralogy, etc.) to manufacturing processes. --Internat. Cyc. 1: the practical application of science to commerce or industry 2: the discipline dealing with the art or science of applying scientific knowledge to practical problems (applied science) e.g., computers, digital cameras, scanners modems, networks, data video projectors, voice digitizers/synthesizers, touch screens joysticks/controllers, MIDI interfaces, probe ware.

telecommunications
The act of sending and receiving information electronically between two or more computers via modem and phone line or local area networks (LAN). The exchange of information can be within a building or around the globe.

Computer/Technology Standard Course of Study
Glossary

text
The actual structure of words in a piece of writing or printing.

video conferencing
Using cameras and phone lines or the internet allowing individuals at two or more sites to see and hear each other and to share and collaborate on graphical and text based data.

"what if" statements
The process of entering various sets of data into a spreadsheet to compare the results in order to analyze data and answer a question.

word processing
A process using a computer to create, edit, and print documents; a computer application that resembles typewriting but allows instant correction of errors, moving text to different locations, and other editing features.